SEWAGE WORKS JOURNAL

VOLUME IV

JAN.–DEC.
1932

Editor:
F. W. MOHLMAN

Business Manager:
WM. W. BUFFUM

Published by
Federation of Sewage Works Associations

EASTON, PA.
MACK PRINTING COMPANY
1932

Author Index

Sewage Works Journal, Volume IV, 1932

Articles:

AGAR, C. C. Comments on the Significance of Laboratory Tests at Sewage Treatment Plants..... 1060

ALBERTSON, JOHN G. New Canaan, Connecticut, Sewage Treatment Works..... 530

ALTHAUSEN, DARRELL, AND BUSWELL, A. M. "Bound Water"—Changes During Sludge Digestion..... 28

BACHMANN, FRANK. Why Should Municipalities Treat Their Sewage—And How Can They Do It?..... 536

BAUMGARTNER, W. H. See Rudolfs, Willem.

BEARD, PAUL J., AND MUNSON, LAURA. Nitrogen Fixation in Activated Sludge. 1002

BORUFF, C. S. See Buswell, A. M.

BROSSMAN, CHARLES. Working Out Sewage Disposal Problems for the Marion County (Indiana), Tuberculosis Hospital, "Sunnyside"..... 308

BROWER, JAMES. See Heisig, H. M.

BUNKER, JOHN W. M. Stream Pollution and Self-Purification..... 885

BUSWELL, A. M. See Althausen, Darrell; Theriault, Emery J., *et al.*

BUSWELL, A. M., AND BORUFF, C. S. The Anaerobic Stabilization of Sewage Screenings..... 973

The Relation Between the Chemical Composition of Organic Matter and the Quality and Quantity of Gas Produced During Sludge Digestion.... 454

CALVERT, C. K. The Hourly Variation of Indianapolis Sewage..... 815

CALVERT, C. K., *et al.* See Emerson, C. A., Jr.

CAMERON, A. B. Erie Sewage Treatment Plant. Design and Preliminary Results of Operation..... 800

CAPEN, CHARLES H., JR. See Daniels, P. N.

CARPENTER, FRED E. The Rockford, Illinois, Sewage Treatment Works. Dedicatory Address..... 1041

CARPENTER, WM. T. See Enslow, Linn H.

CHAMOT, E. M. Symposium on Stream Pollution—Stream Pollution as It Affects Water Purification..... 156

CHILDS, J. A., AND SCHROEPFER, G. J. A Review of Sewer Rental Laws and Charges..... 1006

CLAASSEN, P. W. The Biology of Stream Pollution..... 165

COBURN, STUART E. Industrial Wastes in Relation to Sewage Treatment..... 686

COHN, MORRIS, *et al.* See Emerson, C. A., Jr.

COPELAND, WILLIAM ROGERS. Destruction of Organic Solids in Sewage by Separate Sludge Digestion..... 672

COX, CHARLES R., *et al.* See Emerson, C. A., Jr.

CROMWELL, E. C. Sludge Operations at the Baltimore Sewage Works..... 1054

See Keefer, C. E.

DANIELS, P. N., AND CAPEN, CHARLES H., JR. Camouflaging Sewage Treatment Plants..... 91

DEBRUN, JOHN W., JR. Use of Portable Air-Lift for Removing Sludge from Imhoff Tank..... 542

DONALDSON, D. Sewer Ventilation, Why and How?..... 108

DONALDSON, WELLINGTON. Some Notes on the Operation of Sewage Treatment Works..... 48

DONALDSON, WELLINGTON, *et al.* See Emerson, C. A., Jr.

DOWNES, JOHN R. Gas Collection and Sludge Heating..... 72

EMERSON, C. A., JR., *et al.* Sewage Works Operating and Costs Records..... 3

ENSLOW, LINN H., CARPENTER, WM. T., AND HALE, FRANK E. Chlorination of Sewage for Oxygen Demand Reduction..... 252

FAIR, GORDON M., AND MOORE, EDWARD W. Heat and Energy Relations in the Digestion of Sewage Solids:

I. The Fuel Value of Sewage Solids..... 242

II. The Mathematical Formulation of the Course of Digestion..... 428

III. Effect of Temperature of Incubation Upon the Course of Digestion..... 589

IV. Measurement of Heat and Energy Interchange..... 755

FINCH, LEWIS S. Sewage Works Cross-Connections..... 669

FISCHER, A. J. Recent Studies on Sludge Digestion..... 44

FOOTE, MARIAN E., AND NICHOLS, M. STARR. The Effect of Hydrogen-Ion Concentration on the Distillation of Free Ammonia Nitrogen from Sewages and Trade Wastes..... 37

FREEBURN, H. M. Admission of Industrial Wastes Into Sewerage Systems..... 142

FULLER, GEORGE W. Sewage Disposal Trends in the New York City Region.. 637

GAVETT, WESTON. Sludge Digestion and Gas Collection..... 277

GEER, L. H. Disposal of Silk Mill Waste at South Manchester, Connecticut.... 330

GOUDEY, R. F. New Thoughts on Sludge Digestion and Sludge Disposal..... 609

GREEN, HOWARD R. Financing Sewage Disposal..... 288

HALE, FRANK E. See Enslow, Linn H.

HASELTINE, T. R. The Activated Sludge Process at Salinas, California, with Particular Reference to Causes and Control of Bulking..... 461

HATFIELD, W. D. See Theriault, Emery J., *et al.*

HATFIELD, W. D., AND MORKERT, K. The Removal of Suspended Solids and Production of Gas by the Imhoff Tanks at Decatur, Illinois..... 790

HEISIG, H. M., AND BROWER, JAMES. Practices of Industrial Waste Disposition at Milwaukee..... 680

HEUKELEKIAN, H. Certain Environmental Conditions Affecting the Value of Thermophilic Seed Sludge..... 986

HINMAN, J. J. See Theriault, Emery J., *et al.*

HUBER, HAROLD J. Remodeling the Lancaster, N. Y., Sewage Treatment Works. Elimination of Excessive Ground Water Infiltration Into the Sanitary Sewer System..... 821

HYDE, CHAS. GILMAN. The Thermophilic Digestion of Municipal Garbage and Sewage Sludge, with Analogies..... 993

IMHOFF, KARL, AND MAHR, GEORG. Required Degree of Treatment of Sewage Prior to Its Disposal by Dilution..... 892

JOHNSON, E. C. See Pool, Charles L.
JONES, FRANK WOODBURY. What Are Offensive Odors About a Sewage Works?. 60

KANNEBERG, ADOLPH, AND WARRICK, L. F. Rock River Clean-Up Program as a Part of Inter-State and National Stream Conservation Activities. 695
KEEFER, C. E., AND CROMWELL, E. C. The Dewatering of Sludge by Vacuum Filtration. 992
KEEFER, C. E., AND KRATZ, HERMAN, JR. The Effect of Gases on Sewage Sludge Digestion. 247
KEEFER, C. E., *et al.* See Emerson, C. A., Jr.
KEIRN, K. A. The Care and Operation of Chlorine Control Apparatus. 881
KNOWLTON, W. T. Explosions in Sewers and Sewer Maintenance. 114
KRATZ, HERMAN, JR. Operation of Trickling Filters at Baltimore. 135
See Keefer, C. E.

LARSON, C. C. Suggestions for Increasing the Value of Sewage Treatment Works Data. 101
LEVINE, WILLEM. Biological Purification of Creamery Wastes. 322

MAHLIE, W. S., *et al.* See Emerson, C. A., Jr.
MAHR, GEORG. See Imhoff, Karl.
MAINWARING, ALBERT H. Sewer Maintenance in Philadelphia. 119
MCCONNELL, E. G., *et al.* See Emerson, C. A., Jr.
MOHLMAN, F. W. See Theriault, Emery J., *et al.*
MOORE, EDWARD W. See Fair, Gordon M.
MOORE, EMMELINE. Stream Pollution as It Affects Fish Life. 159
MORGAN, L. S. What the Pennsylvania Department of Health Expects of Each Sewage Plant Operator. 858
MORKERT, K. See Hatfield, W. D.
MUNSON, LAURA. See Beard, Paul J.
MURPHY, LINDON J. Sewage Treatment and the Public. 296

NICHOLS, M. STARR. See Foote, Marian E.

OLEWILER, GRANT M. Sewer Rental in Pennsylvania. 300

PEARSE, LANGDON. A Quarter Century of Progress in Sewage Treatment. 647
PHELPS, EARLE B. Wild-Flower Planting About Sewage Treatment Works. 665
PHILLIPS, ROY L. Sewer Maintenance in a Small City. 125
POOL, CHARLES L., AND JOHNSON, E. C. Safety First in Sewage Plant Operation. 846

RADEBAUGH, GUS H., *et al.* See Emerson, C. A., Jr.
RANKIN, R. S. Symposium on Sludge Handling. Removal of Raw Sludge from Settling Tanks. 275
RAWN, A. M. Digestion of Bar Screenings. 982
REINKE, E. A. Operation of Typical Sewage Disposal Plants in California. 83
REQUARDT, G. J., *et al.* See Emerson, C. A., Jr.
RIDENOUR, G. M., AND LACY, I. O. Activated Sludge Plant with Brush Aeration. 263
Institutional Sewage and Sewage Flow Characteristics. 1046
RUDOLFS, WILLEM. Enzymes and Sludge Digestion. 782
Gas Yield from Sewage Sludge. 444
Relation Between Biochemical Oxygen Demand and Volatile Solids of the Sludge Deposits in the Connecticut River. 315
See Theriault, Emery J., *et al.*
RUDOLFS, WILLEM, AND BAUMGARTNER, WM. H. Sewage Filtration and Incineration of Sludge. 490
RUDOLFS, WILLEM, BAUMGARTNER, W. H., AND SETTER, L. R. Effect of Coagulants on Sludge Digestion. 628
RUDOLPHS, WILLEM, AND ZELLER, P. J. A. Effect of Sulphate Salts on H_2S Production in Sludge Digestion. 771
RUSHTON, L. E. Folsom State Prison Sewage Treatment Works. 674

SCHROEPFER, G. J. See Childs, J. A.
SETTER, L. R. See Rudolfs, Willem.
SEVERANCE, H. D. Control of Cannery Odors at Monterey. 152
SKINNER, JOHN F. Sewage Sludge as Fertilizer. 279
SMIT, JAN. A Study of the Conditions Favoring "Bulking" of Activated Sludge. 960
SMITH, CHESTER A. New Thoughts in Sedimentation of Sewage. 601
SNOW, BAYARD F. South Essex Sewerage System. 850
STREANDER, PHILLIP B. Activated Sludge Practice. 865

TATLOCK, M. W. The Economic Preparation and Sale of Digested Sludge as Commercial Fertilizer. 519
THERIAULT, EMERY J. Modern Measures of Efficiency in Water Purification and Sewage Treatment. 283
THERIAULT, EMERY J., *et al.* Determination of Dissolved Oxygen by the Winkler Method. 413
THOLIN, A. L. Overloaded Trickling Filter Plant Relieved by Sedimentation and Chlorination of Excess Flow. 655
TOWNSEND, DARWIN W. Proposed Disposal of Sewage Grit and Coarse and Fine Screenings by Incineration. 509
TRAVAINI, DARIO. The New Activated Sludge Plant at Phoenix. 525

WALKER, ISAAC S. The Function of Each Unit of a Sewage Plant. 834
WALRAVEN, W. B. Development of Power from Sewage Sludge Gas. 614
WARRICK, L. F. See Kanneberg, Adolph.
WEINER, HENRY. Rapid Moisture Determination of Sewage Sludge. 795

ZELLER, P. J. A. See Rudolfs, Willem.

Reviews and Abstracts:

ADAMS, MILTON P. Grand Rapids Improves Its Sanitation—River Pollution Relieved and Sewer System Expanded. 388
ADENEY, W. E. The Bio-Chemical, Bio-Physical and Physical Principles Underlying the Self-Purification of Crude Sewage Liquor. 903
ARDERN, EDWARD. Sewage Research at Manchester, Annual Report of the Rivers Department, City of Manchester, for the Year Ending March 25, 1931. 242
ARDERN, EDWARD, AND LOCKETT, W. T. Sewage Research at Manchester. Annual Report of the Rivers Department, City of Manchester, for the Year Ending March 31, 1932. 1099

BACH, HERMANN. The Limitations of the B. O. D. Determination. 197
BACH, H., AND GLAZER, K. Determination of Dissolved Carbon in the Analysis of Aqueous Effluents. 408
BARRITT, N. W. The Biological Filtration of Dilute Sucrose Solutions. 407

BAUMGARTNER, W. H. See Rudolfs, W.
BENSON, H. K., AND BENSON, W. R. Detection of Sulphite Waste Liquor in Sea Water ... 722
BENSON, W. R. See Benson, H. K.
BESSELIEVRE, EDMUND B. Equipment Employed in Recovering Sludge from Settling Tanks ... 1086
BEYREIS. The Quality of Water Supplies and the Disposal of Sewage ... 926
BOWES, N. S. The Design, Equipment and Operation of Small Sewage Works ... 568
BROOKS, JOHN H., JR. Annual Report of the Superintendent of Sewers of the City of Worcester, Mass., for the Year Ending Nov. 30, 1931 ... 1098
BUCHLER, WALTER. The Sewerage System at Singapore ... 395
BUSWELL, A. M. See Pearson, E. L.

CALVERT, C. K. Chlorination of Sewage ... 393
CALVERT, H. T. Report of the Director of Water Pollution Research for the Year Ended 30th June, 1931. Departments of Scientific and Industrial Research, Great Britain ... 369
Survey of the River Tees. Part I. Hydrographical ... 217
CHAMBERLIN, NOEL S. See Rudolfs, Willem.
CHILDS, J. A., AND SCHROEPFER, GEO. J. Trickling Filter Loadings ... 577
CLARK, R. W. Developments in Sewage Treatment with Ferric Chloride ... 1090
CLEVELAND, H. BURDETT. Water Supply, Sewage Treatment and Refuse Disposal in 1931 ... 398
CLIFFORD, WM., AND WINDRIDGE, M. E. DOUGLAS. The Settlement of Activated Sludge ... 906
COHN, MORRIS M. Seventeenth Annual Report of the Bureau of Sewage Disposal, City of Schenectady, New York, 1931 ... 1097
COLLINGS, WM. E. See Dare, Chas. W.

DARE, CHARLES W., AND COLLINGS, WILLIAM E. Mechanical Aeration for Domestic Sewage ... 220
DEE, E. C. The Present Condition of Our Rivers from the Standpoint of Pollution ... 1080
DEVENDORF, EARL. See Holmquist, C. A.
DIXON, G. GALE. See Pearse, Langdon.
DONALDSON, WELLINGTON. Use of Activated Sludge Process Increasing ... 567

ELDRIDGE, E. F. Milk Products Waste Treatment Report No. 3 ... 225
The Effect of the Disposal of Water Softening Plant Sludge through the Sewage Disposal Plant ... 228
ELDRIDGE, E. F., AND MALLMAN, W. L. Digestion of Sludge from Strawboard Waste and Sewage Sludge ... 230
Influence of Diluting Water on the Biochemical Oxygen Demand ... 402

FOLWELL, A. PRESCOTT. Mechanical Equipment in Sewage Treatment Works—Grit Chambers and Bar Screens ... 913
FORSTER, B. A. See Wood, A.
FRANCIS, T. P. Dagenham Sewage Works Extension Scheme ... 214
Modern Sewage Treatment ... 731
FRANSEMEIER, F. See Sierp, F.
FRIES, FRANZ. The Essen-Rellinghausen Treatment Works and Results of Its Recent Enlargement ... 187
FULLER, GEO. W. Ward's Island Sewage Treatment Plant Begun ... 219

GARNER, J. H. The Admission of Trade Refuse to Sewers ... 380
West Riding of Yorkshire Rivers Board. Thirty-ninth Annual Report, April 1, 1931, to March 31, 1932 ... 1094
GARNER, J. H., AND WISHART, J. M. The Purification of Waste Waters from Beet Sugar Factories—West Riding of Yorkshire Rivers Board ... 384
GASCOIGNE, GEO. B. Sewage Treatment Project—Cleveland ... 1102
GAVETT, WESTON. Notable Planning Characterizes Morristown's Sewage Treatment Works ... 733
GILDEMEISTER, E., AND WATANABE, HOTORI. An Investigation of the Occurrence of Bacteriophage in Surface Water ... 712
GLAZER, K. See Bach, H.
GOLDING, H. CAMPBELL. Improvements to an Urban Sewage Purification Works: Economic Considerations ... 1085
GOLDTHORPE, H. H. See Scouller, W. D.
GORVIN, J. H. See Wood, A.
GOUDEY, R. F. Chlorine in Sewage Treatment ... 392
Sewage Treatment in United States Compared with That at Los Angeles Experimental Station ... 724
GRAF, G. New Wash Water Clarification Process in Coal Mining ... 925
GREELEY, SAMUEL A., HAVENS, W. L., HOOVER, C. B., KEEFER, C. E., AND SKINNER, JOHN F. Report of American Society of Civil Engineers' Committee on Sludge Digestion ... 575

HARA, Z., AND HIRONAKA, K. Sewage Disposal in the City of Tokio ... 720
HAVENS, W. L. See Greeley, Samuel A.
HELBING, E. H. The Emschergenossenschaft and the Lippeverband, 1925–1930 ... 203
HINDERLES, A. Spiral Sedimentation Plant for Sewage Treatment ... 406
HIRONAKA, K. See Hara, Z.
HOLMQUIST, C. A., AND DEVENDORF, EARL. Rural Water Supply and Sewage Disposal Systems ... 230
HOOVER, C. B. See Greeley, Samuel A.
HURLEY, J. Treatment of Gas Liquor ... 709
HUSMANN, W. Operating Results and Experience with Separate Sludge Digestion at the Essen-Frohnhausen Plant ... 194

IMHOFF, KARL. The Annual Report of the Ruhrverband, 1931 ... 367
Taschenbuch der Stadtenwasserung ... 901
The Re-Use of City Sewage ... 201

KEEFER, C. E. See Greeley, Samuel A.
KEY, A. Gas Works Liquor: Its Composition and Treatment ... 570
KUSCH, M. Modern Settling Tanks Without Sludge Removal Apparatus ... 566

LLOYD, B. Bacterial Denitrification: An Historical and Critical Survey ... 924
LOCKETT, W. T. See Ardern, Edward.
LUMB, J. H. Sewage Disposal at Todmorden ... 711
LUTHER, L. L. Sewerage and Sewage Disposal at Freeport, N. Y. ... 221

MAHR, DR. ING. Operating Data of Treatment Plants in the Ruhr District ... 362
MAKEPEACE, W. H. E. Observations and Experiences in the Design and Construction of a Sewage Purification Works ... 707
MALLALIEU, W. C. Improving Appearance of Jersey City Sewage Disposal Grounds ... 396
MALLMAN, W. L. See Eldridge, E. F.
MENZIES, F. N. K. London County Council: Annual Report, 1930 ... 721
MILES, H. J. See Rudolfs, Willem.
MOHLMAN, F. W. Trends in Sewage Treatment in 1931 ... 725

OLMSTEAD, H. G. Odor Control in a Small Town Disposal Plant 221
O'SHAUGHNESSY, F. R. See Whitehead, H. C.

PEARSE, LANGDON, DIXON, G. GALE, AND STEVENSON, W. L. Progress in Sanitary Engineering 719
PEARSON, E. L., AND BUSWELL, A. M. Acid Sludge Digestion 223
Sludge Ripeness Studies 224

RAUCHBAUGH, GUS. Urbana and Champaign (Illinois) Sanitary District. Sixth Report, from May 1, 1931, to April 30, 1932 1092
RADLEY, J. A. Fluorescence in Relation to Sewage 722
RUDOLFS, WILLEM. Report of a Sanitary Survey of Brandywine Creek for the Wilmington Water Department, Wilmington, Delaware 403
RUDOLFS, W., AND BAUMGARTNER, W. H. Studies on Hydrogen Sulphide Formation in Sewage 1087
RUDOLFS, WILLEM, AND CHAMBERLAIN, NOEL S. Indole and Skatole in Sewage 393
RUDOLFS, WILLEM, AND MILES, H. J. Heat Losses from Sludge Digestion Tanks 918

SCHAETZLE, T. C. Sewage Sludge as Fertilizer 922
SCHRAMM, PAUL. Distributors for Sprinkling Filters 723
SCHROEPFER, GEO. J. See Childs, J. A.
SCHÜTZ, W. Power Requirements for Activated Sludge Plants 196
SCOULLER, W. D., GOLDTHORPE, H. H., AND WATSON, W. Experiments on, and Treatment for, the Destruction of the Filter Fly (*Psychoda*) 215
SHAW, REGINALD C. The Ruhrverband 572
SIERP, F., AND FRANSEMEIER, F. Progress in the Knowledge of the Biochemical Oxygen Demand 560
SKINNER, JOHN F. See Greeley, Samuel A.
SLATER, J. Sludge Digestion as Applied at the Chorley Sewage Works 377
Treatment of Ammoniacal Liquor from Gasworks 379
SMIT, JAN. Preliminary Experiments to Explain the Self-Purification Processes in Polluted Streams 713
STANTON, S. G. The Remodeling and Reconstruction of the Sewerage and Sewage Disposal Works at Southampton 715
STEVENSON, W. L. See Pearse, Langdon.
STROGANOV, S. Treatment of Moscow's Sewage 222

TATLOCK, M. W. Lime-Chlorine Treatment at Dayton, Ohio 224
TAYLOR, HENRY W. Saranac Lake's Sewage Treatment Plant 716
Sedimentation Experiments and Digestion Data 1088
What Is Sewage Disposal? 921
THACKWELL, H. L. Odor Nuisance Surveys. 390
TREADGOLD, W. M. Sewage Disposal Plant at Brampton, Ontario 1091
TUNNEL, CHARLES N. Twenty-four Hours from Sewage to Fertilizer 394

VEATCH, F. M. Sewage-Disposal Plant at Grand Island, Nebraska 580
Separate Sludge Digestion Works at Wichita, Kansas 923
VELZY, C. R. Grand Rapids Improves Its Sanitation—Primary Sewage Treatment Works Completed 389

WADSTED, B. Technical and Economic Considerations of Decantation and Filtration 388
WARCOLLIER, C. Study of the Waste Water of Cider Factories and Apple Distilleries—Their Purification Before Discharge Into Streams 410
WARR, GEO. W. Sea Outfalls 1083
WATANABE, HOTORI. See Gildemeister, E.
WATSON, W. See Scouller, W. D.
WHITEHEAD, H. C. The Works of the Birmingham, Tame and Rea District Drainage Board 207
WHITEHEAD, H. C., AND O'SHAUGHNESSY, F. R. The Treatment of Sewage Sludge by Bacterial Digestion 204
WHITFIELD, V. W. Sewage Treatment Works Built During Period of Low Prices 734
WILLIAMSON, STIRLING L. Starting a New Sewage Disposal Plant 395
WINDRIDGE, M. E. DOUGLAS. See Clifford, Wm.
WISHART, J. M. See Garner, J. H.
WOOD, A., GORVIN, J. H., AND FORSTER, B. A. Report of the Sugar Beet Industry at Home and Abroad 387

Subject Index

Sewage Works Journal, Volume IV, 1932

Articles:

Activated Sludge, Brush Aeration. G. M. Ridenour and I. O. Lacy 263
Nitrogen Fixation in—. Paul J. Beard and Laura Munson 1002
Plant at Phoenix (Ariz.). Dario Travaini 525
Practice. Philip B. Streander 865
Process at Salinas, California, with Particular Reference to Causes and Control of Bulking. T. R. Haseltine 461
Study of Conditions Favoring "Bulking" of—. Dr. Jan Smit 960
Admission of Industrial Wastes Into Sewerage Systems. H. M. Freeburn 142
Ammonia Nitrogen, The Effect of Hydrogen-Ion Concentration on the Distillation of Free—. Marian E. Foote and M. Starr Nichols 37
Anaerobic Stabilization of Sewage Screenings, The—. C. S. Boruff and A. M. Buswell 973

Baltimore (Md.), Operation of Trickling Filters at—. Herman Kratz, Jr. 135
Sludge Operations at the—Sewage Works. E. C. Cromwell 1054
Biochemical Oxygen Demand, Chlorination of Sewage for—Reduction. Linn H. Enslow, Wm. T. Carpenter and Frank E. Hale 252
Determination. Committee Report of Great Lakes and Ohio River Board 738
Relation Between—and Volatile Solids of the Sludge Deposits in the Connecticut River. Willem Rudolfs 315
Biological Purification of Creamery Wastes. Max Levine 322
Biology of Stream Pollution, The—. P. W. Claassen 165
"Bound Water"—Changes During Sludge Digestion. Darrell Althausen and A. M. Buswell 28
Brush Aeration, Activated-Sludge Plant with—. G. M. Ridenour and I. O. Lacy 263

California, Operation of Typical Sewage Disposal Plants in—. E. A. Reinke 83
Camouflaging Sewage Treatment Plants. P. N. Daniels and Chas. H. Capen, Jr. 91
Care and Operation of Chlorine Control Apparatus, The—. K. A. Keirn 881
Certain Environmental Conditions Affecting the Value of Thermophilic Seed Sludge. H. Heukelekian 986
Chlorination, Apparatus, Care and Operation of. K. A. Keirn 881
Of Excess Flow, Overloaded Trickling Filter Plant Relieved by Sedimentation and—. A. L. Tholin 655
Of Sewage for Oxygen Demand Reduction. Linn H. Enslow, Wm. T. Carpenter and F. E. Hale 252
Comments on the Significance of Laboratory Tests at Sewage Treatment Plants. Charles C. Agar 1060
Control of Cannery Odors at Monterey. H. D. Severance 152
Cost Records, Sewage Works Operating and—. C. A. Emerson, Jr., *et al.* 3
Creamery Wastes, Biological Purification of—. Max Levine 322
Cross-Connections, Sewage Works—. Lewis S. Finch 669

Decatur, Illinois, The Removal of Suspended Solids and Production of Gas by the Imhoff Tanks of—. W. D. Hatfield and K. Morkert 790
Destruction of Organic Solids in Sewage by Separate Sludge Digestion. Wm. Rogers Copeland 672
Determination of Dissolved Oxygen by the Winkler Method, The—. E. J. Theriault, *et al.* (Committee Report, F. S. W. A.) 413
Development of Power from Sewage Sludge Gas. W. B. Walraven 614
Dewatering of Sludge by Vacuum Filtration, The—. C. E. Keefer and E. C. Cromwell 929
Digested Sludge as Commercial Fertilizer. The Economic Preparation and Sale of—. M. W. Tatlock 519
Digestion of Bar Screenings. A. M. Rawn 982
Disposal of Silk Mill Waste at South Manchester, Connecticut. L. H. Geer 330
Dissolved Oxygen, The Determination of—, by the Winkler Method. E. J. Theriault, *et al.* (Committee Report, F. S. W. A.) 413

Economic Preparation and Sale of Digested Sludge as Commercial Fertilizer, The—. M. W. Tatlock 519
Effect of Coagulants on Sludge Digestion. Willem Rudolfs, W. H. Baumgartner and L. R. Setter 628
Effect of Gases on Sewage Sludge Digestion, The—. C. E. Keefer and Herman Kratz, Jr. 247
Effect of Hydrogen-Ion Concentration on the Distillation of Free Ammonia Nitrogen from Sewages and Trade Wastes, Marian E. Foote and M. Starr Nichols. 37
Effect of Sulphate Salts on H_2S Production in Sludge Digestion. Willem Rudolfs and P. J. A. Zeller 771
Enzymes and Sludge Digestion. Willem Rudolfs 782
Erie Sewage Treatment Plant. Design and Preliminary Results of Operation. A. B. Cameron 800
Explosions in Sewers and Sewer Maintenance. W. T. Knowlton 114

Filtration, Dewatering of Sludge by Vacuum—. C. E. Keefer and E. C. Cromwell 929
Sewage—and Incineration of Sludge. Willem Rudolfs and Wm. H. Baumgartner 490
Financing Sewage Disposal. Howard R. Green 288
Folsom State Prison Sewage Treatment Works. L. E. Rushton 674
Function of Each Unit of a Sewage Plant, The—. Isaac S. Walker 834

Garbage and Sewage Sludge, The Thermophilic Digestion of—. Charles Gilman Hyde 993
Gas Collection, and Sludge Heating. John R. Downes 72
See Sludge Digestion.
Gas Yield from Sewage Sludge. Willem Rudolfs 444

Heat and Energy Relations in the Digestion of Sewage Solids. Gordon M. Fair and Edward W. Moore. I. The Fuel Value of Sewage Solids 242

II. Mathematical Formulation of the Course of Digestion 428
III. Effect of Temperature of Incubation Upon the Course of Digestion 589
IV. Measurement of Heat and Energy Interchange 755
Hourly Variation of Indianapolis Sewage, The—. C. K. Calvert 815
Hydrogen-Ion Concentration, Effect of—on the Distillation of Free Ammonia-Nitrogen from Sewages and Trade Wastes. Marian R. Foote and M. Starr Nichols 37

Imhoff Tank, Use of Portable Air-Lift for Removing Sludge from—. John W. Debrun, Jr. 542
Imhoff Tanks of Decatur, Illinois, The Removal of Suspended Solids and Production of Gas by the—. W. D. Hatfield and K. Morkert 790
Incineration, Disposal of Sewage Grit and Fine Screenings by—. Darwin W. Townsend 509
Sewage Filtration and—of Sludge. Wilem Rudolfs and Wm. H. Baumgartner 490
Indianapolis (Ind.), Sewage, The Hourly Variation of—. By C. K. Calvert ... 815
Industrial Wastes, Admission of—into Sewerage Systems. H. M. Freeburn 142
Creamery. Max Levine 322
Disposition at Milwaukee, Practices of—. H. M. Heisig and James Brower 680
In Relation to Sewage Treatment. Stuart E. Coburn 686
Silk Mill. L. H. Geer 330
See Trade Wastes.
Institutional Sewage and Sewage Flow Characteristics. G. M. Ridenour and I. O. Lacy 1046

Laboratory Tests at Sewage Treatment Plants, Comments on the Significance of—. Charles C. Agar 1060
Lancaster, N. Y., Sewage Treatment Works, Remodeling the—. Elimination of Excessive Ground Water Infiltration Into the Sanitary Sewer System. Harold J. Huber 821

Marion County (Indiana), Tuberculosis Hospital, "Sunnyside," Working Out Sewage Disposal Problems for the—. Chas. Brossman 308
Milwaukee, Practices of Industrial Waste Disposition at—. H. M. Heisig and James Brower 680
Modern Measures of Efficiency in Water Purification and Sewage Treatment. Emery J. Theriault 283
Monterey, Control of Cannery Odors at—. H. D. Severance 152

New Activated-Sludge Plant at Phoenix (Ariz.), The—. Dario Travaini 525
New Canaan, Connecticut, Sewage Treatment Works. John G. Albertson 530
New Thoughts in Sedimentation of Sewage. Chester A. Smith 601
New Thoughts on Sludge Digestion and Sludge Disposal. R. F. Goudey 609
New York City Region, Sewage Disposal Trends in the—. George W. Fuller ... 637
Nitrogen Fixation in Activated Sludge. Paul J. Beard and Laura Munson 1002

Odors About a Sewage Works? What Are Offensive—. Frank Woodbury Jones . 60
Odors at Monterey, Control of Cannery—. H. D. Severance 152
Operation of Trickling Filters at Baltimore. Herman Kratz, Jr. 135
Operation of Typical Sewage Disposal Plants in California. E. A. Reinke ... 83
Overloaded Trickling Filter Plant Relieved by Sedimentation and Chlorination of Excess Flow. A. L. Tholin 655

Pennsylvania Department of Health Expects of Each Sewage Plant Operator, What the—. L. S. Morgan 858
Pennsylvania, Sewer Rental in—. Grant M. Olewiler 300
Philadelphia, Sewer Maintenance in—. Albert H. Mainwaring 119
Phoenix (Ariz.), The New Activated Sludge Plant at—. Dario Travaini 525
Practices of Industrial Waste Disposition at Milwaukee. H. M. Heisig and James Brower 680
Proposed Disposal of Sewage Grit and Coarse and Fine Screenings by Incineration. Darwin W. Townsend 509

Quarter Century of Progress in Sewage Treatment, A—. Langdon Pearse 647

Rapid Moisture Determination of Sewage Sludge. Henry Weiner 795
Recent Studies on Sludge Digestion. A. J. Fischer 44
Recommended Uniform Procedure for B. O. D. Determinations. Progress Report—Joint B. O. D. Committee of the Great Lakes and Ohio River Board of Public Health Engineers 738
Relation Between Biochemical Oxygen Demand and Volatile Solids of the Sludge Deposits in the Connecticut River. Willem Rudolfs 315
Relation Between the Chemical Composition of Organic Matter and the Quality and Quantity of Gas Produced During Sludge Digestion. A. M. Buswell and C. S. Boruff 454
Remodeling the Lancaster, N. Y., Sewage Treatment Works. Elimination of Excessive Ground Water Infiltration Into the Sanitary Sewer System. Harold J. Huber 821
Removal of Suspended Solids and Production of Gas by the Imhoff Tanks at Decatur, Illinois, The—. W. D. Hatfield and K. Morkert 790
Required Degree of Treatment of Sewage Prior to Its Disposal by Dilution. Karl Imhoff and Georg Mahr 892
Review of Sewer Rental Laws and Charges, A—. J. A. Childs and G. J. Schroepfer 1006
Rock River Clean-up Program as a Part of Inter-State and National Stream Conservation Activities. Adolf Kanneberg and L. F. Warrick 695
Rockford, Illinois, Sewage Treatment Works. Dedicatory Address. Fred E. Carpenter 1041

Safety First in Sewage Plant Operation. Chas. L. Pool and E. C. Johnson 846
Salinas, California, The Activated-Sludge Process at—, with Particular Reference to Causes and Control of Bulking. T. R. Haseltine 461
Screenings, Digestion of Bar—. A. M. Rawn 982
Sedimentation and Chlorination of Excess Flow, Overloaded Trickling Filter Plant Relieved by—. A. L. Tholin ... 655
Sedimentation of Sewage, New Thoughts in—. Chester A. Smith 601
Separate Sludge Digestion, Destruction of Organic Solids in Sewage by—. Wm. Rogers Copeland 672
Sewage, Chlorination of—, for Oxygen Demand Reduction. L. H. Enslow, Wm. T. Carpenter and F. E. Hale 252
Hourly Variation of Indianapolis (Ind.)—. C. K. Calvert 815

New Thoughts in Sedimentation of—. C. A. Smith 601
Required Degree of Treatment of—, Prior to Its Disposal by Dilution. Karl Imhoff and Georg Mahr 892
Sewage and Sewage Flow Characteristics, Institutional—. G. M. Ridenour and I. O. Lacy 1046
Sewage Disposal, Financing. H. R. Green 288
Problems for the Marion County (Ind.) Tuberculosis Hospital, "Sunnyside," Working Out—. Chas. Brossman 308
Trends in the New York City Region. George W. Fuller 637
Sewage Filtration and Incineration of Sludge. Willem Rudolfs and Wm. H. Baumgartner 490
Sewage Flow Characteristics, Institutional Sewage and—. G. M. Ridenour and I. O. Lacy 1046
Sewage Plant, Function of Each Unit of a—. Isaac S. Walker 834
Sewage Plant Operation, Safety First in—. Chas. L. Pool and E. C. Johnson 846
Sewage Screenings, The Anaerobic Stabilization of—. C. S. Boruff and A. M. Buswell 973
Sewage Sludge, as Fertilizer. John F. Skinner 279
Gas Yield from—. Willem Rudolfs 444
Rapid Moisture Determination of—. Henry Weiner 795
Thermophilic Digestion of Municipal Garbage and—. Chas. Gilman Hyde 993
Sewage Sludge Gas, Development of Power from—. W. B. Walraven 614
Sewage Treatment, A Quarter Century Progress in—. Langdon Pearse 647
And the Public. J. Murphy 296
Industrial Wastes in Relation to—. Stuart E. Coburn 686
Modern Measures of Efficiency in Water Purification and—. Emery J. Theriault 283
Sewage Treatment Plants, California, Operation of Typical—in. E. A. Reinke 83
Camouflaging—. P. N. Daniels and Chas. H. Capen, Jr. 91
Comments on the Significance of Laboratory Tests at—. Charles C. Agar 1060
Erie, Pa. A. B. Cameron 800
Folsom State Prison 674
Lancaster, N. Y., Remodeling of—. Harold J. Huber 821
New Canaan, Conn. John G. Albertson 530
Rockford, Illinois. Fred E. Carpenter 1041
Sewage Treatment Works Data, Suggestions for Increasing the Value of—. C. C. Larson 101
Sewage Treatment Works, Some Notes on the Operation of—. Wellington Donaldson 48
Sewage Treatment Works, Wild-Flower Planting About—. Earle B. Phelps 665
Sewage Works, Cross-Connections. Lewis S. Finch 669
Operating and Cost Records. C. A. Emerson, Jr., *et al.* 3
Sludge Operations at the Baltimore—. E. C. Cromwell 1054
What Are Offensive Odors at a—. Frank Woodbury Jones 60
Sewages and Trade Wastes, Effect of Hydrogen-Ion Concentration on the Distillation of Free Ammonia Nitrogen from—. Marian E. Foote and M. Starr Nichols 37
Sewer Maintenance in a Small City. R. L. Phillips 125
In Philadelphia. A. H. Mainwaring 119
Sewer Rental in Pennsylvania. Grant M. Olewiler 300
Sewer Rental Laws and Charges, A Review of—. J. A. Childs and G. J. Schroepfer 1006
Sewer Ventilation, Why and How? D. Donaldson 108
Sewerage Systems, Admission of Industrial Wastes Into—. H. M. Freeburn 142
Sewers and Sewer Maintenance, Explosions in—. W. T. Knowlton 114
Silk Mill Waste at South Manchester, Connecticut, Disposal of—. L. H. Geer 330
Sludge, Certain Environmental Conditions Affecting the Value of Thermophilic Seed—. H. Heukelekian 986
Dewatering of—, by Vacuum Filtration. C. E. Keefer and E. C. Cromwell 929
Removal of Raw—from Settling Tanks. R. S. Rankin 275
Sewage Filtration and Incineration of—. Willem Rudolfs and Wm. H. Baumgartner 490
Use of Portable Air-Lift for Removing—from Imhoff Tank. John W. Debrun, Jr. 542
Sludge as Fertilizer, Sewage—. John F. Skinner 279
Sludge Digestion, "Bound Water"—Changes During—. Darrell Althausen and A. M. Buswell 28
And Gas Collection. Weston Gavett 277
And Sludge Disposal, New Thoughts on—. R. F. Goudy 609
Effect of Coagulants on—. Willem Rudolfs, W. H. Baumgartner, and L. R. Setter 628
Effect of Gases on Sewage—. C. E. Keefer and Herman Kratz, Jr. 247
Effect of Sulphate Salts on H_2S Production in—. Willem Rudolfs and P. J. A. Zeller 771
Enzymes and—, Willem Rudolfs 782
Recent Studies on—. A. J. Fischer 44
Relation Between the Chemical Composition of Organic Matter and the Quality and Quantity of Gas Produced During—. A. M. Buswell and C. S. Boruff 454
Sludge Digestion, Heat and Energy Relations in—. Gordon M. Fair and Edward W. Moore. I. The Fuel Value of Sewage Solids 242
II. Mathematical Formulation of the Course of Digestion 428
III. Effect of Temperature of Incubation Upon the Course of Digestion 589
IV. Measurement of Heat and Energy Interchange 755
Sludge Disposal, New Thoughts on Sludge Digestion and—. R. F. Goudey 609
Sludge Heating, Gas Collection and—. John R. Downes 72
Sludge Operations at the Baltimore Sewage Works. Edward C. Cromwell 1054
Some Notes on the Operation of Sewage Treatment Works. Wellington Donaldson 48
South Essex Sewerage System. Bayard F. Snow 850
South Manchester, Connecticut, Disposal of Silk Mill Waste at—. L. H. Geer 330
Stream Conservation Activities, Rock River Clean-up Program as a Part of Inter-State and National—. Adolf Kanneberg and L. F. Warrick 695
Stream Pollution, and Self Purification. John W. M. Bunker 885
As It Affects Fish Life. Emmeline Moore 159
Biology of—. P. W. Claasen 165
Symposium on—. E. M. Chamot 156
Study of the Conditions Favoring "Bulking" of Activated Sludge. Dr. Jan Smit 960
Suggestions for Increasing the Value of Sewage Treatment Works Data. C. C. Larson 101
Suspended Solids Removal and Production of Gas by the Imhoff Tanks of Decatur, Illinois. W. D. Hatfield and K. Morkert 790
Symposium on, Sludge Handling. Removal

of Raw Sludge from Settling Tanks. R. S. Rankin 275
Stream Pollution. As It Affects Water Purification. E. M. Chamot 156
Thermophilic Digestion of Municipal Garbage and Sewage Sludge, with Analogies, The—. Charles Gilman Hyde 993
Thermophilic Seed Sludge, Certain Environmental Conditions Affecting the Value of—. H. Heukelekian 986
Trade Wastes, The Effect of Hydrogen-Ion Concentration on the Distillation of Free Ammonia Nitrogen from Sewages and—. Marian E. Foote and M. Starr Nichols 37
See Industrial Wastes.
Trickling Filter Plant Relieved by Sedimentation and Chlorination of Excess Flow, Overloaded—. A. L. Tholin 655
Trickling Filters at Baltimore, Operation of—. Herman Kratz, Jr. 135
Use of Portable Air-Lift for Removing Sludge from Imhoff Tanks. John W. Debrun, Jr. 542
Volatile Solids of the Sludge Deposits in the Connecticut River, Relation Between B. O. D. and—. Willem Rudolfs 315
Water Purification and Sewage Treatment, Modern Measures of Efficiency in—. Emery J. Theriault 283
What Are Offensive Odors About a Sewage Works? Frank Woodbury Jones 60
What the Pennsylvania Department of Health Expects of Each Sewage Plant Operator. L. S. Morgan 858
Why Should Municipalities Treat Their Sewage—And How Can They Do It? Frank Bachmann 536
Wild Flower Planting About Sewage Treatment Works. Earle B. Phelps 665
Working Out Sewage Disposal Problems for the Marion County (Indiana) Tuberculosis Hospital "Sunnyside." Chas. Brossman 308

Editorials:

B. O. D. Determination, The— 899
Control of Operation of Activated-Sludge Plants 338
Essen and Birmingham 173
Gas from Water 546
Journal Now Bi-Monthly 337
Retrospect and Anticipation 702
Selling Sewage Treatment on Facts—Not Fancy 1071
Vacuum Filtration of Sludge 1069

Federation Affairs:

Determination of Dissolved Oxygen by the Winkler Method, The— 413
Minutes of the Annual Meeting of the Board of Control, Federation of Sewage Works Association 239
Sewage Works Operating and Cost Records 3
Two British Associations Affiliate with the Federation of Sewage Works Association 737

Proceedings of Local Associations:

California Sewage Works Association, Spring Conference 556
Fifth Annual Convention 1073
Central States Sewage Works Association, Notice of Fifth Annual Meeting 361
Fifth Annual Meeting 553
Iowa Sewage Treatment Conference, Thirteenth Annual Conference 183
Iowa Waste Disposal Association, Fifth Annual Meeting 183
Maryland-Delaware Water and Sewerage Association, Sixth Annual Conference 549
Members of Association of Managers of Sewage Disposal Works 357
Members of Federation as of December 31, 1931 341
Members of Federation, Officers of Local Associations 177
Michigan Sewage Works Association, Eighth Annual Meeting 548
Missouri Water and Sewerage Conference, Seventh Annual Meeting 182
Eighth Annual Meeting 1075
New England Sewage Works Association, Third Fall Meeting 181
Fourth Annual Meeting 550
Fourth Annual Meeting, Preliminary Announcement 361
Notice of Fall Meeting 706
New York State Sewage Works Association Fourth Annual Meeting 185
Annual Fall Meeting 1076
Non-Association Subscribers to the JOURNAL in the United States 357
United States Possessions 359
Foreign 359
Officers of Local Associations, Members of Federation 177
Ohio Sewage Works Conference Group Affiliates with Federation 180
Pennsylvania Sewage Works Association, Sixth Annual Conference 704

Reviews and Abstracts:

Acid Sludge Digestion. E. L. Pearson and A. M. Buswell 223
Activated Sludge, Leipzig, New Results from the Experimental Plant 199
Power Requirements for—Plants. W. Schütz 196
Process in Small Installations. F. M. Veatch 235
Settlement of—. Wm. Clifford and M. F. Douglas Windridge 906
Use of—Process Increasing. Wellington Donaldson 567
Yosemite Valley—Plant. H. B. Hommon 728
Admission of Trade Refuse to Sewers, The—. J. H. Garner 380
All Sewage Solids Burned. *Anon.* 917
Ammoniacal Liquor from Gas Works and Treatment of—. J. Slater 379
Amount of Sewage from Schools and Institutions. *Anon.* 717
Annual Report, Birmingham, Tame and Rea District Drainage Board (British), The Seventieth—. *Anon.* 211
Hackensack Valley Sewerage Commission in 1931. *Anon.* 399
London County Council for 1930. F. N. K. Menzies 721
Long Island Sanitary Commission, Nassau County—State of New York. *Anon.* 582
Manchester (England), Year Ended March 31, 1931. Edward Ardern 212
Manchester (England), 1932. Edward Ardern and W. T. Lockett 1099
Milwaukee, Wisconsin, 1930, Seventeenth—. *Anon.* 407
Missouri Water and Sewage Conference, The Sixth—(1931) 234
Ohio Conference on Sewage Treatment, The Fourth—(1930) 231
Ruhrverband (1931). Karl Imhoff 367
Schenectady, N. Y., 1931. Morris M. Cohn 1097
Westchester County Sanitary Sewer Commission (1931) 584
West Riding of Yorkshire Rivers Board, April 1, 1931, to March 31, 1932. John H. Garner 1094

Worcester, Mass., 1931. John H. Brooks, Jr. 1098
Urbana and Champaign (Ill.), May 1, 1931, to April 30, 1932. Gus Radebaugh. 1092
Ardmore, Pa., Sewer Rentals at—. *Anon.* 718
Automatically Proportioning Ferric Chloride to Sludge. *Anon.* 1089

Bacterial Denitrification: An Historical and Critical Survey. B. Lloyd. 924
Bacteriophage, An Investigation of the Occurrence of—, in Surface Water. E. Gildemeister and H. Watanabe. 712
Beet Sugar Industry, Disposal Critical for—. *Anon.* 721
Beet Sugar Wastes, Purification of—. West Riding of Yorkshire Rivers Board. J. H. Garner and J. M. Wishart. 384
Bio-Chemical, Bio-Physical and Physical Principles Underlying the Self-Purification of Crude Sewage Liquor. W. E. Adeney. 903
Biochemical Oxygen Demand, Influence of Diluting Water on the—. E. F. Eldridge and W. L. Mallman. 402
Limitations of the—Determination. Hermann Bach. 197
Progress in the Knowledge of the—. F. Sierp and F. Fransemeier. 560
Biological Filtration of Dilute Sucrose Solutions, The—. N. W. Barritt. 407
Birmingham, Tame and Rea District Drainage Board, The Works of—. H. C. Whitehead. 207
Seventieth Annual Report. *Anon.* 211
Bradford, England, Unusual Features of Sewage Treatment at—. *Anon.* 912
Bradford's Sewage Disposal Problems. *Anon.* 409
Brampton, Ontario, Sewage Disposal Plant at—. W. M. Treadgold. 1091

California Sewage Works Journal. 727
Carbon, Determination of Dissolved—, in the Analysis of Aqueous Effluents. H. Bach and K. Glazer. 408
Causes and Prevention of Foaming in Imhoff Tanks. Geo. S. Russell. 235
Chlorination, Influence of Sewage—on Streams Containing Fish. 198
Chlorination of Sewage. C. K. Calvert. 393
Chlorine in Sewage Treatment. R. F. Goudey. 392
Chorley Sewage Works, Sludge Digestion as Applied at the—. J. Slater. 377
Cider Factories and Apple Distilleries, Study of the Waste Water of—, Their Purification Before Discharge Into Streams. C. Warcollien. 410
City Liable for Damages Caused by Sewage Disposal. *Anon.* 923
Clarification Apparatus with Flow Regulation. R. Van Der Leeden. 199
Cleveland (Ohio), Sewage Treatment Project—. George B. Gascoigne. 1102
Coal Mine Wastes, Stream Pollution by—. *Anon.* 915
Coal Mining, New Wash Water Clarification Process in—. G. Graf. 925

Dagenham, (Eng.), Sewage Works Extension Scheme. T. P. Francis. 214
Dayton, Ohio, Lime-Chlorine Treatment at—. M. W. Tatlock. 224
Dayton Sewage Treatment Works. M. W. Tatlock. 231
Design Equipment, and Operation of Small Sewage Works. N. S. Bowes. 568
Detection of Sulphite Waste Liquors in Sea Water. H. K. Benson and W. R. Benson. 722
Determination of Dissolved Carbon in the Analysis of Aqueous Effluents. H. Bach and K. Glazer. 408
Developments in Sewage Treatment with Ferric Chloride. R. W. Clark. 1090
Digestion of Sludge from Strawboard Waste with Sewage Sludge. E. F. Eldridge and W. L. Mallman. 230
Disposal Critical for Beet Sugar Industry. *Anon.* 721
Disposal of Sewage, The Quality of Water Supplies and the—. Beyreis. 926
Disposal of Water Softening Plant Sludge through the Sewage Disposal Plant, The Effect of the—. E. F. Eldridge. 228
Distributors for Sprinkling Filters. Paul Schramm. 723

Effect of the Disposal of Water Softening Plant Sludge through the Sewage Disposal Plant. E. F. Eldridge. 228
Emschergenossenschaft and the Lippeverband, 1925-1930, The—. E. H. Helbing. 203
Enlarged Sewage Treatment Plant for Small City Stresses Odor Control. *Anon.* 396
Equipment Employed in Recovering Sludge from Settling Tanks. Edmund B. Besselievre. 1086
Essen-Frohnhausen Plant, Operating Results and Experience with Separate Sludge Digestion at the—. W. Husmann. 194
Essen-Rellinghausen Treatment Works and Results of Its Recent Enlargement. Franz Fries. 487
Experiments on and Treatment for the Destruction of the Filter Fly (*Psychoda*). W. D. Scouller, H. H. Goldthorpe and W. Watson. 215
Experiences with Industrial Wastes at the Fostoria Sewage Treatment Plant. A. B. Cameron. 232

Ferric Chloride, Automatically Proportioning—to Sludge. *Anon.* 1089
Developments in Sewage Treatment with—. R. W. Clark. 1090
Filtration, Biological—, of Dilute Sucrose Solutions. N. W. Barritt. 407
Technical and Economic Considerations of Decantation and—. B. Wadsted. 388
Financing Sewage Disposal Plants in Ohio. *Anon.* 397
Fluorescence in Relation to Sewage. J. A. Radley. 722
Foaming in Imhoff Tanks, Causes and Prevention of—. Geo. S. Russel. 235
Fostoria Sewage Treatment Plant, Experiences with Industrial Wastes at the—. A. B. Cameron. 232
Freeport, N. Y., Sewerage and Sewage Disposal at—. L. L. Luther. 221

Gas Liquor, Treatment of—. J. Hurley. 709
Gas Works Liquor: Its Composition and Treatment. A. Key. 570
Grand Island, Nebraska, Sewage Treatment Plant at—. F. M. Veatch. 580
Grand Rapids Improves Its Sanitation—Primary Sewage Treatment Works Completed. C. R. Velzy. 389
River Pollution Relieved and Sewer System Expanded. Milton P. Adams. 388
Great Britain, Report of the Director of Water Pollution Research for the Year Ended June 30, 1931. Departments of Scientific and Industrial Research. H. T. Calvert. 369
Guildford, Sewage Purification at—. *Anon.* 910

Hackensack Valley Sewerage Commission 1931. Report of the—. *Anon.* 399
Heat Losses from Sludge Digestion Tanks. Willem Rudolfs and H. J. Miles. 918
How Should Sewage Treatment Plants Be Investigated? By H. Bach. 201
Hydrogen Sulphide, Formation in Sewage, Studies on—. W. Rudolfs and W. H. Baumgartner. 1087

Improvements to an Urban Sewage Purification Works: Economic Considerations. H. Campbell Golding. 1085

Improving Appearance of Jersey City Sewage Disposal Grounds. W. C. Mallalieu ... 396
Indole and Skatole in—. Willem Rudolfs and Noel S. Chamberlin ... 393
Industrial Wastes, Admission of—to Sewers. J. H. Garner ... 380
Ammoniacal Liquor from Gas Works. J. Slater ... 379
Cider Factories and Apple Distilleries—. C. Warcollier ... 410
Effect of Cellulose Factory Wastes on Fish. G. Ebeling ... 198
Experiences with—at Fostoria, Ohio. A. B. Cameron ... 232
Gas Liquor. J. Hurley ... 709
Gas Works Liquor. A. Key ... 570
Milk Waste Treatment. E. F. Eldridge ... 225
Pulp Mills. *Anon.* ... 924
Purification of—from Beet Sugar Factories. J. H. Garner and J. M. Wishart ... 384
Strawboard Wastes. E. F. Eldridge and W. L. Mallman ... 230
Sucrose Solutions, Biological Filtration of Dilute—. N. W. Barritt ... 407
Influence of Diluting Water on the B. O. D. E. F. Eldridge and W. L. Mallman ... 402
Influence of Sewage Chlorination on Streams Containing Fish. G. Ebeling ... 198
Insuring Glass Covers for Sludge Beds. *Anon.* ... 914
Investigation of the Occurrence of Bacteriophage in Surface Water, An—. E. Gildemeister and H. Watanabe ... 712

Jersey City Sewage Disposal Grounds, Improving Appearance of—. W. C. Mallalieu ... 396
Jersey City's Boonton Sewage Treatment Plant. *Anon.* ... 581

Lancaster, N. Y. A Neglected Sewer System Revamped as Unemployment Relief. *Anon.* ... 920
Legal and Other Considerations on Sewer Rental. Wm. J. Locke ... 729
Leipzig, New Results from the Experimental Activated Sludge Plant at—. F. Mieder and K. Viehl ... 199
Leipzig Settling Tanks, Three Years' Operation of the—. F. Mieder ... 199
Lime-Chlorine Treatment at Dayton, Ohio. M. W. Tatlock ... 224
Limitations of the B. O. D. Determination, The—. Herman Bach ... 197
London County Council: Annual Report, 1930. F. N. K. Menzies ... 721
Long Island Sanitary Commission, Nassau County—State of New York, Report of the Governor's Special—. *Anon.* ... 582
Los Angeles Experimental Station, Sewage Treatment in U. S. Compared with That at—. R. F. Goudey ... 724
Los Angeles, Some Practical Improvements in Operation Resulting from Research at Griffith Park Experimental Station. R. F. Goudey ... 727

Manchester (England), Sewage Research at—. Annual Report of Rivers Department, City of Manchester for Year Ended March 31, 1931. Edward Ardern ... 214
Year Ended March 31, 1932. Edward Ardern and W. T. Lockett ... 1099
Mechanical Aeration for Domestic Sewage. Chas. W. Dorn and Wm. E. Collings ... 220
Mechanical Equipment in Sewage Treatment Works—Grit Chambers and Bar Screens. A. Prescott Folwell ... 913
Milk Products Waste Treatment Report No. 3. E. F. Eldridge ... 225
Milwaukee, Wisconsin, Seventeenth Annual Report of the Sewerage Commission of the City of—, 1930. *Anon.* ... 407
Mining District, Sewage Disposal in a—. *Anon.* ... 216
Missouri Water and Sewage Conference, Sixth Annual Report (1931) ... 234
Modern Sewage Treatment. T. P. Francis ... 731
Modern Settling Tanks Without Sludge Removal Apparatus. M. Kusch ... 566
Morristown's Sewage Treatment Works, Notable Planning Characterizes—. Weston Gavett ... 733
Moscow (Russia), Treatment of Sewage at —. S. Stroganov ... 222
Municipal Engineering in 1931; Sewage Disposal. *Anon.* ... 373

Neglected Sewer System Revamped as Unemployment Relief, A—. *Anon.* ... 920
New Results from the Experimental Activated Sludge Plant in Leipzig. F. Mieder and K. Viehl ... 199
New Wash Water Clarification Process in Coal Mining. G. Graf ... 925
North Carolina, Operating Costs of Sewage Treatment in—. *Anon.* ... 585
Notable Planning Characterizes Morristown's Sewage Treatment Works. Weston Gavett ... 733

Observations and Experiences in the Design and Construction of a Sewage Purification Works. W. H. E. Makepeace ... 707
Odor Control in a Small Town Disposal Plant. H. G. Olmstead ... 221
Odor Nuisance Surveys. H. L. Thackwell ... 390
Ohio Conference on Sewage Treatment, Fourth Annual Report (1930) ... 231
Ohio, Financing Sewage Disposal Plants in—. *Anon.* ... 397
Operating Costs of Sewage Treatment in North Carolina. *Anon.* ... 585
Operating Data of Treatment Plants in the Ruhr District. Dr. Ing. Mahr ... 363
Operating Results and Experience with Separate Sludge Digestion at the Essen-Frohnhausen Plant. W. Husmann ... 194
Oyster Industry and Waste from Pulp Mills, The—. *Anon.* ... 924

Phoenix, Arizona, Sewerage Improvements, —. W. J. Jamieson and Clyde C. Kennedy ... 729
Preliminary Experiments to Explain the Self-Purification Processes in Polluted Streams. Jan Smit ... 713
Present Condition of Our Rivers from the Standpoint of Pollution, The—. E. C. Dee ... 1080
Progress in the Knowledge of the Biochemical Oxygen Demand. F. Sierp and F. Fransemeier ... 560
Progress in Sanitary Engineering. Langdon Pearse, G. Gale Dixon and W. L. Stevenson ... 719
Providence (R. I.), Sewage Disposal Plant. *Anon.* ... 391
Power Requirements for Activated Sludge Plants. W. Schütz ... 196
Psychoda, Experiments on and Treatment for the Destruction of the Filter Fly—. W. D. Scouller, H. H. Goldthorpe and W. Watson ... 215
Pulp Mills, The Oyster Industry and Waste from—. *Anon.* ... 924
Purification of Waste Waters from Beet Sugar Factories—West Riding of Yorkshire Rivers Board. J. H. Garner and J. M. Wishart ... 384

Quality of Water Supplies and the Disposal of Sewage, The—. Beyreis ... 926

Recent Results of Investigations of the Effect of Cellulose Factory Wastes on Fish. G. Ebeling ... 198
Recovering Sludge from Settling Tanks, Equipment Employed in—. Edmund B. Besselievre ... 1086

Refined Sewage Treatment Is Justified. Carl Wilson ... 729
Relation Between Design and Operation of Sewage Treatment Works. Robt. A. Allton ... 233
Remodeling and Reconstruction of the Sewerage and Sewage Disposal Works at Southampton. S. G. Stanton ... 715
Report of American Society of Civil Engineers' Committee on Sludge Digestion. Samuel A. Greeley, W. L. Havens, C. B. Hoover, C. E. Keefer and John F. Skinner ... 575
Report of a Sanitary Survey of Brandywine Creek for the Wilmington Water Department, Wilmington, Del. Willem Rudolfs ... 403
Report of the Hackensack Valley Sewerage Commission in 1931. *Anon.* ... 399
Report of the Sugar Beet Industry at Home and Abroad. A. Wood, J. H. Gorvin and B. A. Forster ... 387
Requirements for Satisfactory Results from Sewage Treatment Plants. H. M. Bosch ... 236
Re-Use of City Sewage, The—. Karl Imhoff ... 201
River Esk (Midlothian), Second Report of the Scottish Advisory Committee on Rivers Pollution Prevention—. *Anon.* 408
River Pollution Research. The Tees Survey: A British Association Discussion. *Anon.* ... 1082
River Tees (Eng.), Survey of—. Part I. Hydrographical. H. T. Calvert ... 217
Ruhr District, Operating Data of Treatment Plants in the—. Dr. Ing. Mahr ... 363
Ruhrverband, The. Reginald Shaw ... 572
Ruhrverband, The Annual Report of the—, (1931). Karl Imhoff ... 367
Rural Water Supply and Sewage Disposal Systems. C. A. Holmquist and Earl Devendorf ... 230

Salinas Sewage Treatment Plant. T. R. Haseltine ... 730
Sanitary Engineering, Progress in—. Langdon Pearse, G. Gale Dixon and W. L. Stevenson ... 719
Saranac Lake, Sedimentation Experiments and Digestion Data at—. H. W. Taylor ... 1088
Saranac Lake's Sewage Treatment Plant. Henry W. Taylor ... 716
Schenectady, New York, 1931, Seventeenth Annual Report of the Bureau of Sewage Disposal, City of—. Morris M. Cohn ... 1097
Sea Outfalls. George W. Warr ... 1083
Second Report of the Scottish Advisory Committee on Rivers Pollution Prevention—River Esk (Midlothian). *Anon.* 408
Sedimentation Experiments and Digestion Data at Saranac Lake. H. W. Taylor. 1088
Self-Purification of Streams, Some Observed Effects of Dilution in the—. J. K. Hoskins ... 233
Separate Sludge Digestion Works at Wichita, Kansas. F. M. Veatch ... 923
Settlement of Activated Sludge, The—. Wm. Clifford and M. E. Douglas Windridge ... 906
Settling Tanks Without Sludge Removal Apparatus, Modern—. M. Kusch ... 566
Seventeenth Annual Report of the Bureau of Sewage Disposal, City of Schenectady, New York, 1931. Morris M. Cohn ... 1097
Sewage, Amount of—from Schools and Institutions. *Anon.* ... 717
Bio-Chemical, Bio-Physical and Physical Principles Underlying the Self-Purification of Crude—. W. E. Adeney ... 903
Chlorination of—. C. K. Calvert ... 393
Fluorescence in Relation to—. J. A. Radley ... 722
Indole and Skatole in—. Willem Rudolfs and Noel S. Chamberlin ... 393
Mechanical Aeration for Domestic—. Chas. W. Dare and Wm. E. Collings ... 220
Pumping Stations. C. K. Mathews ... 234
Research at Manchester, England. Edward Ardern ... 212
Re-Use of—. Karl Imhoff ... 201
Studies on Hydrogen Sulphide Formation In—. W. Rudolfs and W. H. Baumgartner ... 1087
Sewage Disposal at Todmorden. J. H. Lumb ... 741
City Liable for Damages Caused by—. *Anon.* ... 923
City of Tokio. Z. Hara and K. Hironaka 720
In a Mining District. *Anon.* ... 216
In 1931. *Anon.* ... 373
Out of California. Clyde C. Kennedy ... 729
Wm. A. Allen ... 729
Sewage Disposal Systems, Rural Water Supply and—. C. A. Holmquist and Earl Devendorf ... 230
Sewage Disposal, What Is—? Henry W. Taylor ... 921
Sewage Pumping Stations. C. K. Mathews 234
Sewage Purification at Guildford. *Anon.* ... 910
Sewage Research at Manchester, Annual Report of Rivers Department, City of Manchester (England), for Year Ending March 31, 1932. Edward Ardern and W. T. Lockett ... 1099
Sewage Sludge as Fertilizer. T. C. Schaetzle 922
Sewage Solids Burned, All—. *Anon.* ... 917
Sewage Treatment and Refuse Disposal in 1931, Water Supply and—. H. Burdett Cleveland ... 398
In U. S., Compared with That at Los Angeles Experimental Station. R. F. Goudey ... 724
Modern—. T. P. Francis ... 731
Spiral Sedimentation Plant for—. A. Hinderles ... 406
Trends in—in 1931. F. W. Mohlman ... 725
With Ferric Chloride, Developments in—. R. W. Clark ... 1090
Sewage Treatment Plant, Bradford, England. *Anon.* ... 912
Brampton, Ontario. W. M. Treadgold ... 1091
Chorley (Eng.). J. Slater ... 373
Cleveland (Ohio). Geo. B. Gascoigne ... 1102
Dagenham (England), Extension Scheme. T. P. Francis ... 214
Dayton (Ohio). M. W. Tatlock ... 231
Design and Operation of—for Country Clubs and Private Estates. R. F. MacDowell ... 233
Design, Equipment and Operation of Small—. N. S. Bowes ... 568
Essen-Frohnhausen (Germany). W. Husmann ... 194
Essen-Rellinghausen (Germany). Franz Fries ... 187
Financing of—in Ohio. *Anon.* ... 397
Fostoria (Ohio). A. B. Cameron ... 232
Freeport, N. Y. L. L. Luther ... 221
Grand Island, Nebraska. F. M. Veatch. 580
Grand Rapids (Mich.). C. R. Velzy ... 389
Improvements to an Urban—. H. Campbell Golding ... 1085
Jersey City (N. J.). *Anon.* ... 581
Leipzig (Germany). F. Mieder ... 199
Mechanical Equipment in—. Grit Chambers and Bar Screens. A. Prescott Folwell ... 913
Morristown. Weston Gavett ... 733
Moscow (Russia). S. Stroganov ... 222
Observations and Experiences in the Design and Construction of a—. W. H. E. Makepeace ... 709
Providence (R. I.). *Anon.* ... 391
Relation Between Design and Operation of—. Robt. A. Allton ... 233
Requirements for Satisfactory Results from. H. M. Bosch ... 236
Royston, Yorks (England). *Anon.* ... 216

Ruhr District (Germany). Dr. Ing. Mahr 363
Salinas (California). T. R. Haseltine 730
Saranac Lake. Henry W. Taylor 716
Southampton (Eng.). Remodeling of—. S. G. Stanton 715
Starting a New—. S. L. Williamson 395
Ward's Island (N. Y.). Geo. W. Fuller 219
Sewage Treatment Project—Cleveland (Ohio). George B. Gascoigne 1102
Sewage Treatment Works Built During Period of Low Prices. V. W. Whitfield 734
Sewer Rental, Legal and Other Considerations on— Wm. J. Locke 729
Sewer Rentals, Ardmore, Pa. *Anon.* 718
Pay for Treatment Plant. *Anon.* 717
Sewerage and Sewage Disposal at Freeport, N. Y. L. L. Luther 221
Sewerage Improvements, Phoenix, Arizona. W. J. Jamieson and Clyde C. Kennedy 729
Sewerage System at Singapore, The— Walter Buchler 395
Singapore, The Sewerage System at— Walter Buchler 395
Sludge Beds, Insuring Glass Covers for— *Anon.* 914
Sludge Digestion, Acid—. E. L. Pearson and A. M. Buswell 223
As Applied at the Chorley (Eng.), Sewage Works. J. Slater 377
At Wichita, Kansas, Separate—. F. M. Veatch 923
Bacterial—. H. C. Whitehead and F. R. O'Shaughnessy 204
Operating Results and Experience with Separate—at the Essen-Frohnhausen Plant. W. Husmann 194
Report of Committee of the American Society of Civil Engineers on—. 575
Strawboard Wastes with Sewage Sludge. E. F. Eldridge and W. L. Mallman 230
Sludge Digestion Tanks, Heat Losses from—. Willem Rudolfs and H. J. Miles 918
Sludge Gas Explosion at Sewage Works, Woonsocket, R. I. *Anon.* 225
Sludge Ripeness Studies. E. L. Pearson and A. M. Buswell 224
Slurry Reclamation. *Anon.* 925
Some Observations on the Design and Operation of Sewage Treatment Plants for Country Clubs and Private Estates. R. F. MacDowell 233
Some Observed Effects of Dilution in the Self-Purification of Streams. J. K. Hoskins 233
Some Practical Improvements in Operation Resulting from Research at Griffith Park Experimental Station, Los Angeles. R. F. Goudey 727
Southampton (Eng.), The Remodeling and Reconstruction of the Sewerage and Sewage Disposal Works at—. S. G. Stanton 715
Spiral Sedimentation Plant for Sewage Treatment. A. Henderles 406
Sprinkling Filters, Distributors for— Paul Schramm 723
Starting a New Sewage Disposal Plant. Sterling L. Williamson 395
State Department of Public Health and Its Relation to the Sewage Works Operator. Giles S. Porter, M.D. 728
Stream Pollution, Brandywine Creek, Wilmington, Del. Willem Rudolfs 403
By Coal Mine Wastes. *Anon.* 915
River Esk (Midlothian). *Anon.* 408
River Tees (Eng.). H. T. Calvert 217
Anon. 1082
Self-Purification of Streams. J. K. Hoskins 233
Studies on Hydrogen Sulphide Formation in Sewage. W. Rudolfs and W. H. Baumgartner 1087
Study of the Waste Water of Cider Factories and Apple Distilleries—Their Purification Before Discharge Into Streams. C. Warcollien 410
Sugar Beet Industry at Home and Abroad, Report of—. A. Wood, J. H. Gorvin and B. A. Forster 387
Sulphite Waste Liquor in Sea Water, Detection of—. H. K. Benson and W. R. Benson 722
Survey of the River Tees. M. T. Calvert 217

Taschenbuch der Stadtentwasserung. Karl Imhoff 901
Technical and Economic Considerations of Decantation and Filtration. B. Wadsted 388
Three Years' Results of Operation of the Leipzig Settling Tanks. F. Mieder 199
Todmordern, Sewage Disposal at—. J. H. Lumb 711
Tokio, Sewage Disposal in the City of—. Z. Hara and K. Hironka 720
Treatment of Ammoniacal Liquor from Gas Works. J. Slater 379
Gas Liquor. J. Hurley 709
Moscow's Sewage. S. Stroganov 222
Sewage Sludge by Bacterial Digestion. H. C. Whitehead and F. R. O'Shaughnessy 204
Trends in Sewage Treatment in 1931. F. W. Mohlman 725
Trickling Filter Loadings. J. A. Childs and G. J. Schroepfer 577
Twenty-four Hours from Sewage to Fertilizer. Chas. N. Tunnel 394

Unusual Features of Sewage Treatment at Bradford, England. *Anon.* 912
Urbana and Champaign (Illinois), Sanitary District. Sixth Report, from May 1, 1931, to April 30, 1932. Gus Radebaugh 1092
Use of Activated Sludge Process Increasing. Wellington Donaldson 567

Vom Wasser (1931) 198

Ward's Island Sewage Treatment Plant Begun. George W. Fuller 219
Water Pollution Research, Report of the Director of—. Departments of Scientific and Industrial Research. Great Britain (1931). H. T. Calvert 369
Water Supply, Sewage Treatment and Refuse Disposal in 1931. H. Burdett Cleveland 398
Westchester County Sanitary Sewer Commission, Report of the—(1931). *Anon.* 584
West Riding of Yorkshire Rivers Board, Purification of Waste Waters from—. J. H. Garner and J. M. Wishart 384
Thirty-ninth Annual Report, April 1, 1931, to March 31, 1932. John H. Garner .. 1094
What Is Sewage Disposal? Henry W. Taylor 921
Wichita, Kansas, Separate Sludge Digestion Works at—. F. M. Veatch 923
Wilmington, Delaware, Report of a Sanitary Survey of Brandywine Creek for the Wilmington Water Department. Willem Rudolfs 403
Woonsocket, R. I., Sludge Gas Explosion at Sewage Works, —. *Anon.* 225
Worcester, Mass., Annual Report of the Superintendent of Sewers of the City of—for the Year Ending Nov. 30, 1931. John H. Brooks, Jr. 1098
Works of the Birmingham, Tame and Rea District Drainage Board, The—. H. C. Whitehead 207

Yosemite Valley Activated Sludge Plant. H. B. Hommon 728